

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended): A photocatalytic reactor for the destruction of organic air-borne pollutants, the photoreactor comprising;

- means for admission of a gas stream carrying air-borne volatile organic pollutants into a closed tubing system;
- a Venturi section for constraining and increasing the velocity of the gas stream while simultaneously creating a suction effect to promote self-cleaning of said Venturi section by the removal of dust and dirt from the air stream and preventing dust and dirt to accumulate within said Venturi section; and
- means for irradiating the air-borne volatile organic pollutants within the gas stream;
- wherein said Venturi section comprises an elongate pipe having a convergent section, a straight section and a divergent section, said divergent section having a UV light illuminating means and a reflective means to direct reflected light onto the irradiating means.

Claim 2 (Original): The photoreactor of claim 1, wherein said irradiating means is located downstream of said constraining and velocity means.

Claim 3 (Previously Presented): The photoreactor of claim 1, wherein said irradiating means is transversely positioned with respect to the gas stream.

Claim 4 (Previously Presented): The photoreactor of claim 1, wherein said irradiating means comprises a catalyst imbedded within a supported transparent fibrous mesh.

Claim 5 (Original): The photoreactor of claim 4, wherein said catalyst is TiO_2 .

Claim 6 (Previously Presented): The photoreactor of claim 4, wherein said fibrous mesh is supported by a perforated plate having adequately sized holes to provide for a drop in air pressure and adequate air flow through said plate.

Claim 7 (Original): The photoreactor of claim 6, wherein said perforated plate is heated to desorb any absorbed water.

Claim 8 (Original): The photoreactor of claim 5, wherein said transparent fibrous mesh is homogeneously loaded with up to about 50% TiO_2/g of fibrous mesh.

Claim 9 (Original): The photoreactor of claim 7, wherein said perforated plate is made of a non-corrosive, non-oxidizing material.

Claims 10-12 (Cancelled).

Claim 13 (Currently Amended): The photoreactor of claim 1 ~~42~~, wherein said Venturi section is made of a non-corrosive material.

Claim 14 (Cancelled).

Claim 15 (Currently Amended): The photoreactor of claim 1 ~~44~~, wherein said UV light illuminating means comprises UV lamps positioned adjacent windows and said reflective means comprises mirrors adjacent said windows.

Claim 16 (Original): The photoreactor of claim 15, wherein said UV lamps are selected from the group consisting of low pressure mercury lamps, medium pressure mercury lamps and advanced medium pressure lamps.

Claim 17 (Original): The photoreactor of claim 15, wherein said windows are made of a material selected from the group consisting of plexiglass, quartz glass, pyrex glass and stove glass.

Claim 18 (Original): The photoreactor of claim 15, wherein said UV lamps are supported by reflectors to direct and reflect the UV light towards the irradiating means.

Claim 19 (Original): The reactor as claimed in claim 1, wherein said reactor additionally comprises an outlet means downstream of said irradiating means for releasing the treated gas stream.

Claim 20 (Original): The reactor as claimed in claim 1, wherein said reactor additionally comprises a fan means located upstream of said irradiating means to circulate the gas stream towards the irradiating means.

Claim 21 (Currently Amended): A photocatalytic reactor for the destruction of organic air-borne pollutants, the photoreactor comprising;

- a system for containing and enclosing a gas stream;
- inlet means for admission of said gas stream within said system;
- means for irradiating the air-borne volatile organic pollutants within said gas stream;

- a Venturi section for constraining and increasing the velocity of said gas stream while simultaneously creating a suction effect to promote self-cleaning of said Venturi section, said Venturi section comprising an elongate pipe having a convergent section, a straight section and a divergent section, said divergent section having a UV light illuminating means and a reflective means to direct reflected light onto the irradiating means;

~~- an irradiating means located downstream of said Venturi section for degradation of airborne organic pollutants within the gas stream; and~~

- an outlet means located downstream of said irradiating means to release the treated air stream from said reactor; and

- a fan means located upstream of said irradiating means to circulate the gas stream towards the irradiating means.

Claim 22 (Currently Amended): A method for the destruction of organic air-borne pollutants, said method comprising the steps of:

~~- circulating a gas stream having volatile organic pollutants therein through a photocatalytic reactor;~~

~~- constraining and increasing the velocity of the gas stream while simultaneously creating a suction effect; and~~

~~- directing said gas stream through an irradiating means for degradation of the pollutants.~~

- circulating a gas stream carrying volatile organic pollutants therein through a closed tubing system comprising a Venturi section for constraining and increasing the velocity of the gas stream while simultaneously creating a suction effect, the Venturi section comprising an elongate pipe having a convergent section, a straight section and a divergent section, said

divergent section having a UV light illuminating means and a reflective means to direct reflected light onto the irradiating means; and

- directing said gas stream through said irradiating means for degradation of the pollutants.

Claim 23 (Cancelled).

Claim 24 (Currently Amended): The method of claim ~~23~~22, wherein said suction effect promotes self cleaning of said Venturi section by the removal of dust and dirt from the air stream and preventing dust and dirt to accumulate within said Venturi section.

Claim 25 (Previously Presented): The method of claim 21, wherein said irradiating means is transversely positioned with respect to the gas stream.

Claim 26 (Cancelled).